



# LightHAWK<sup>®</sup> 2 Wall Switch Occupancy Sensors

## INSTALLATION INSTRUCTIONS

### DESCRIPTION

The *LightHAWK2* Wall Switch is an intelligent self-adapting occupancy sensor that is designed to replace existing wall switches.

### SPECIFICATIONS

- 1000 sq. ft. coverage area (Models: LHIR and LHMT)
- 400 sq. ft. coverage area (Models: LHUS)
- Single or Dual Circuit 120/277VAC, 50/60Hz operation
- Single or Dual Circuit 347VAC, 50/60Hz operation (Canadian version)
- Electrical Ratings: (Each Output Separately)
  - 120VAC – 800W Incandescent, 1000W Ballast, 1/4 HP
  - 277 VAC – 1800W Ballast, 1/4 HP
  - 347VAC – 1500W Ballast
- Adjustable Time Delay: 4-30 minutes, self-adapts based on occupancy
- Light Level Adjustment (Circuit B output on Dual Circuit versions): 10 to 500FC
- UL, cUL Listed

### PRECAUTIONS

- **CAUTION: RISK OF ELECTRICAL SHOCK.** Turn power off at service panel before beginning installation. Never wire energized electrical components.
- Read and understand all instructions before beginning installation.
- **NOTICE:** For installation by a licensed electrician in accordance with National and/or local Electrical Codes and the following instructions.
- **NOTICE:** For indoor use only.
- **CAUTION: USE COPPER CONDUCTOR ONLY**
- Confirm device ratings are suitable for application prior to installation. Use of device in applications beyond its specified ratings or in applications other than its intended use may cause an unsafe condition and will void manufacturer's warranty.
- **NOTICE:** Do not install if product appears to be damaged.
- **NOTICE:** Connect to field wiring rated for 60°C or greater.

### SAVE THESE INSTRUCTIONS!

### INSTALLATION

1. Turn power OFF at the service panel.
2. Remove the old switch(es) if applicable.
3. Wire as shown in the WIRING DIAGRAMS section.

Figures 1 and 2 denote wiring method for Leakage to Ground Sensors. (**NOTE: A secure ground is required for proper operation.**)

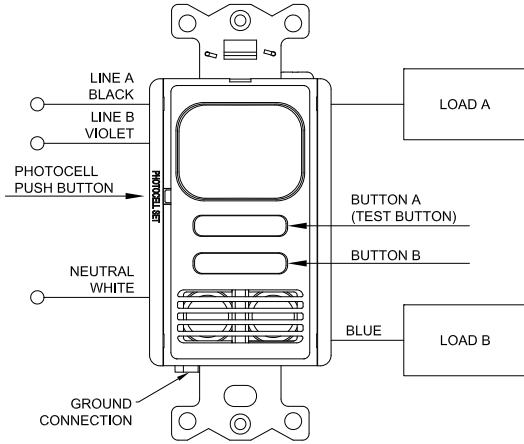
Figures 3 and 4 denote wiring method for Neutral Wiring Sensors.

(**NOTE: If using only a single voltage, connect BOTH the black and violet input wires to the power source.**)

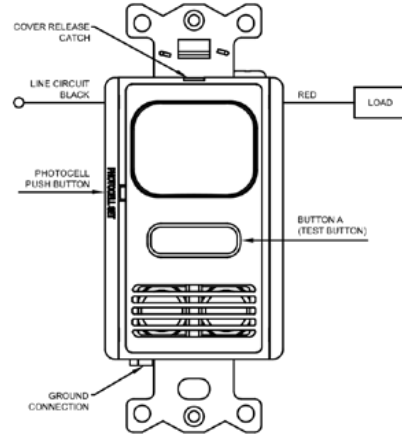
Figure 5 shows wiring for Low Voltage models. (**NOTE: Low Voltage models require one UVPP Power Pack per output.**)
4. Install sensor in wall box using mounting screws provided.
5. Restore power to the sensor and allow it to initialize (up to 2 minutes).
6. Sensor is factory configured to provide the most energy savings. If additional adjustments are required, see the **ADJUSTMENTS** section.
7. If daylight harvesting is desired, calibrate the sensor's photocell as described in the **PHOTOCELL CONTROL** section.
8. Install a decorator style wall plate (not included).

## WIRING DIAGRAMS

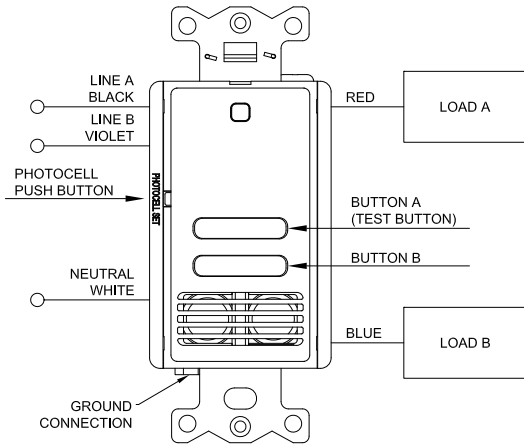
**FIGURE 1 - MULTI-TECH, DUAL CIRCUIT, GROUND CONNECTION**



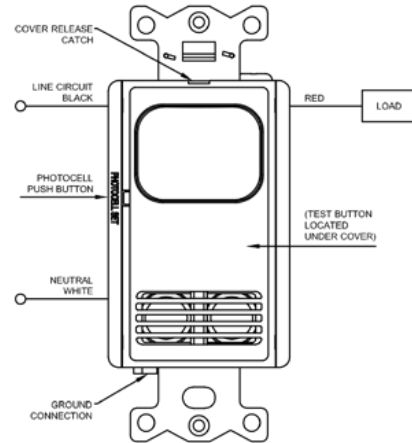
**FIGURE 2 - MULTI-TECH, SINGLE CIRCUIT, GROUND CONNECTION**



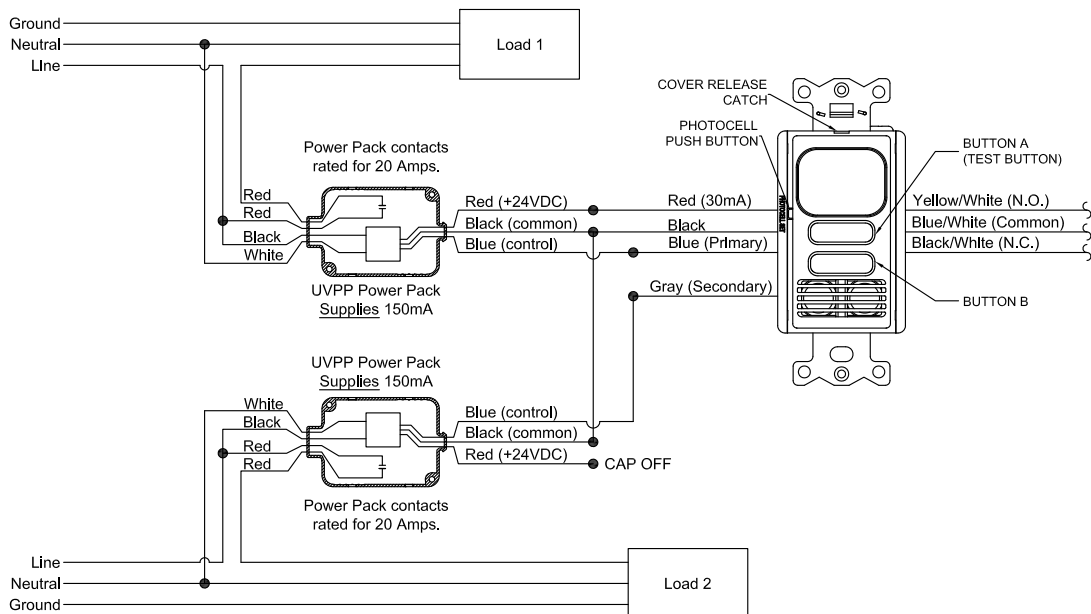
**FIGURE 3 - ULTRASONIC, DUAL CIRCUIT, NEUTRAL CONNECTION**



**FIGURE 4 - MULTI-TECH, SINGLE CIRCUIT, NO BUTTON, NEUTRAL CONNECTION**



**FIGURE 5 - LOW VOLTAGE LIGHTHAWK2, MULTI-TECHNOLOGY SENSOR, CONTROLLING TWO CIRCUITS USING UVPP POWER PACKS**



## TEST MODE

1. Make sure lights are ON.
2. Press and hold the ON/OFF button. Lights will cycle OFF then back ON. Release the ON/OFF button.
  - For dual circuit sensors, press and hold the ON/OFF button for Circuit A.
  - For sensors without buttons, remove the cover (see **ADJUSTMENTS** section) and press and hold the Test Button.
3. Sensor is now in Test Mode (**NOTE: While in Test Mode the sensor will operate in Automatic ON/Automatic OFF mode**). Vacate room; lights should turn OFF after 5 seconds. Wait 5 seconds after turn OFF before re-entering space. Step back into room, lights will turn back ON. Repeat walk test as necessary to confirm sensor is operating and detecting in the area as desired. Sensor will flash red LED while moving to indicate Passive Infrared (PIR) or Ultrasonic occupancy detection respectively. (**NOTE: Sensors with ultrasonic technology can be very sensitive and may require more than 5 seconds of no movement before turning lights off.**)
4. To exit Test Mode, press any button.

**(NOTE: Sensor will automatically exit Test Mode after sixty (60) minutes.)**

## MANUAL OVERRIDE

Press button(s) to toggle lights ON or OFF. Lights will remain in the last state determined by the buttons while occupancy is detected. Sensor will return to the programmed mode of operation when the sensor times out. **NOTE: Sensors with no buttons always operate in the Automatic ON/Automatic OFF mode and cannot be manually turned off.**

## PHOTOCELL CONTROL

The photocell is used to detect if other light sources such as sunlight, are sufficient to illuminate the space without turning on the controlled lights. For Dual Circuit sensors, only Circuit B is controlled by the photocell. The sensor is shipped from the factory with the photocell control disabled. If use of the photocell is desired, calibrate the photocell set point as follows:

1. With the light level at the desired level where the controlled lights should be off, PRESS and RELEASE the photocell set button using the end of a paper clip or small bladed screwdriver.
2. Step back from the sensor to avoid changing ambient light levels in the room. During calibration the sensor will turn the lights OFF then back ON.
3. After the calibration process, the sensor will return to its programmed mode of operation. During occupancy, the sensor will turn lighting OFF sixty (60) seconds after reaching or exceeding the set point level. When the lighting level drops below the set point level the sensor will turn the lights ON.

## ADJUSTMENTS

The following switch adjustments require that the sensor's cover be removed. Remove the cover by inserting a small blade screwdriver into the catch at the top of the sensor and gently pry the cover off. Set the adjustment switches as desired (see **CONFIGURATION SWITCH SETTINGS** section). Factory default is all switches OFF. To re-install cover, place cover directly over the sensor and align the cover's four (4) catches with the recesses in the sensor housing. Snap cover onto housing making sure that all catches are securely in place.

## CONFIGURATION SWITCH SETTINGS – BANK A

### Switch 1 – Relay 1 Sensor Operation

Programs the sensor for either Manual ON/Automatic OFF operation or Automatic ON/Automatic OFF operation. When set to Manual ON/Automatic OFF mode, lights are turned ON by manually pressing the ON/OFF button. If the sensor times out and turns the lights OFF in the Manual ON/Automatic OFF mode while the space is still occupied, any motion detected within thirty (30) seconds will automatically turn the lights back ON, without requiring the user to press the ON button. **NOTE: Switch 1 has no function on vacancy only model (Cat. No. Suffix "M")**

### Switch 2 –

Used on 2 Relay models only. Sets sensor operation for second relay. Similar to switch 1 above.

### Switch 3 – Adaptive or Fixed Timer

Controls selection between Adaptive Timer Mode and Fixed Timer Mode. In Adaptive Timer Mode, the sensor automatically self-adjusts its timeout delay to optimize energy savings. The sensor will initialize its timer value to eight (8) minutes. If the Bank B Timer Select 0 and Timer Select 1 switches have been set to four (4) minutes, this will be the smallest timer value used. In Fixed Timer Mode, the sensor's self-adapting timer functions are disabled and the sensor's timeout delay is set according to the Bank B Timer Select 0 and Timer Select 1 switch settings.

**Switch 4 – Adaptive Reset**

The sensor is equipped with Hubbell Building Automation’s patented self-adaptive IntelliDAPT® technology which automatically adjusts the sensor’s sensitivity and timer settings to optimize performance based on occupancy patterns. The sensor constantly learns and adjusts appropriately. If the learned settings need to be reset (e.g. when relocating sensor to another area), toggle the switch ON then OFF. The adaptive timer is reset according to the Bank B Timer Select 0 and Timer Select 1 switches. The adaptive sensitivity (both PIR and Ultrasonic as applicable) are reset to factory default. The photocell sensor settings are also reset to factory default (disabled) such that the sensor will turn on the light(s) in response to occupancy regardless of ambient light levels in the lighted space. **(NOTE: Adaptive reset can also be achieved by pressing and holding the photocell set button for ten (10) seconds.)**

**Switch 5 – Relay Bypass**

If it is necessary to service the controlled circuits without de-energizing them at the breaker panel **(NOTE: this is not recommended as a standard procedure)**, perform the following steps:

1. With the lights ON, set the relay bypass switch to the ON position.
2. Push the button(s) to turn the lights OFF.
3. Push the button(s) again to verify override (lights should not come back on).

The relay bypass switch will now interrupt sensor operation, preventing output(s) from turning ON again, regardless of occupancy or pushbutton conditions. To return the sensor to normal operation, flip the relay bypass switch to the OFF position. To confirm sensor is operating normally, lights should now turn ON and OFF when the button(s) are pressed.

**CONFIGURATION SWITCH SETTINGS – BANK B**

**Switches 1 and 2 – Timer Settings**

Sets the length of time lights will remain ON after last motion is detected. The timeout value can be set to 4, 8, 16 or 30 minutes.

See **Bank A – Switch 3 - Adaptive or Fixed Timer** section for additional information.

**Switches 3 and 4 – Sensing Technology Enable/Disable**

Enables or disables the occupancy sensing technologies used by the sensor. If all sensing technologies are disabled, sensor operates as a manual ON/OFF switch.

**Switch 5 – Sensitivity**

Sets the sensor’s initial Passive Infrared (PIR) and/or Ultrasonic sensitivity level. Sensitivity can be set to either High or Low.

Switch Bank A	Function	← OFF		ON →	
1	Relay 1 Operation	Manual ON/ Automatic OFF		Automatic ON/ Automatic OFF	
2	Relay 2 Operation	Manual ON/ Automatic OFF		Automatic ON/ Automatic OFF	
3	Timer Mode	Adaptive		Fixed	
4	Adaptive Reset	Enable Adaptation		Restore Factory Default	
5	Relay Bypass	Normal Operation		Relay Override	
Switth Bank B	Function	← OFF		ON →	
1	Timer Select 0	→	←	←	→
2	Timer Select 1	←	←	→	→
Time		4 Min	8 Min	16 Min	30 Min
3	Passive Infrared	Enabled		Disabled	
4	Ultrasonic	Enabled		Disabled	
5	Sensitivity	High		Low	